PRODUCT MANUAL

KLIC-DI

Interface KNX - Variable Refrigerant Volume

ZN1CL-KLIC-DI

Program version: 1.3

Manual edition: a

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1. INTRODUCTION

1.1. KLIC-DI

KLIC-DI is an interface that allows a bidirectional communication between a KNX domotic system and the **commercial** series of air-conditioning units and the **industrial** air-conditioning units of the Variable Refrigerant Volume systems.

Due to its **bidirectional** communication, the air conditioning unit can be controlled in the same way as using an IR remote control and the real status if the air-conditioning unit is checked and sent to the KNX bus for its monitoring.

Figure 1.1. KLLIC-DI interface

Is case of using a wired remote control in the same communication bus of the unit, KLIC-DI will communicate with this remote control in a bidirectional way, one acting as master control and the other, as slave control. It is important to verify that KLIC-DI and the wires remote control are configured with different types of control. This way, the control acting as slave will update its status when the master orders it and will communicate its status changes when they are modified from the own slave control.

KLIC-DI has several features, among which:

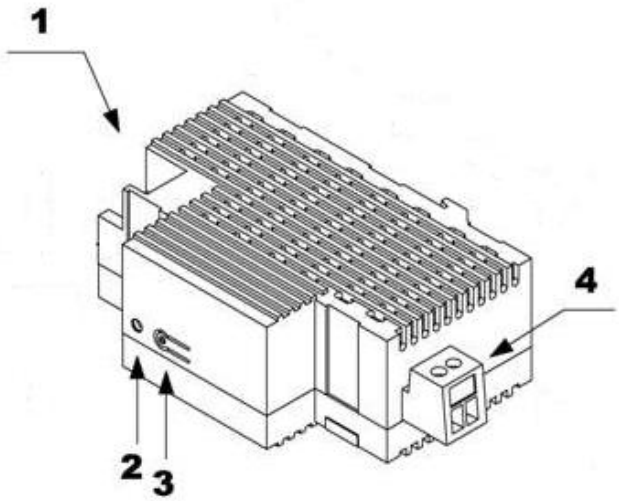
- Controls bidirectionally the industrial A/C units (Variable Refrigerant Volume).

- Control over all the air-conditioning unit functionality. Error management handles the own A/C unit error codes as well as any communication errors that may arise.

- LED indicator that allows monitoring the bidirectional traffic flow.

1.2. INSTALLATION

In the figure 1.2, the elements scheme of KLIC-DI is shown.



1.- KNX connector

2.- LED indicator

3.- Programming button

4.- 2-wire communication terminal block

Figure 1.2. KLIC-DI. Elements scheme

KLIC-DI interface connects to the KNX bus via the bus connecting terminals (1). On the other hand, this device is connected to the A/C internal unit PCB (P1/P2 connectors), using a 2-wire cable. See figure 1.3.

Note: *If the wired remote control is also used it is necessary to make sure that the wired remote control is in mode Slave if KLIC-DI is configured as Master control. And vice versa, if KLIC-DI is configured as Slave control, the wired remote control must be in Master position.*

Once the device is provided with power supply from the KNX bus, both the physical address and the KLIC-DI Variable Refrigerant Volume application program can be downloaded.

This device does not need any additional external power supply since it is powered through the KNX bus.

It is described below the functionality of the main elements of the interface:

- **Programming button (3):** a short press on this button sets the device in programming mode, and the associated LED (2) lights red. If this button is held while plugging the device into de KNX bus, KLIC-DI goes into secure mode.

- **LED indicator (2)**: luminous signal that indicates the working state of KLIC-DI. Besides lighting red when the device is in programming mode, this LED may also light blue and green, thus indicating the status of the bidirectional communication between KNX and the A/C unit, resulting very useful in the installation process. Next, the meaning of every LED color:

  - **Fixed red:** KLIC-DI is in programming mode.
  - **Blinking red:** KLIC-DI is in secure mode (the LED blinks red every 0.5 seconds).
  - **Fixed green:** failure in the KLIC-DI power supply (this happens when KLIC-DI is not connected to the AC unit and/or when the AC unit is not connected to the power supply line).
  - **Blinking green:** communication data from AC unit to KLIC-DI.
  - **Blinking blue:** communication data from KLIC-DI to AC unit.

- **Communication cable:** 2-wire cable, connected on one hand to KLIC-DI (through the provided terminal block (4)) and, on the other hand, direct to P1/P2 connectors that can be found at the PCB of the internal unit, or in the wired remote control.

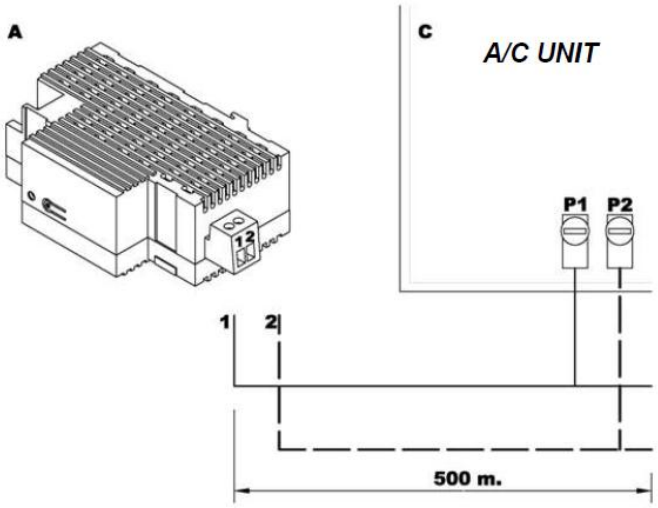


Figure 1.3. Connecting KLIC-DI to P1/P2 bus

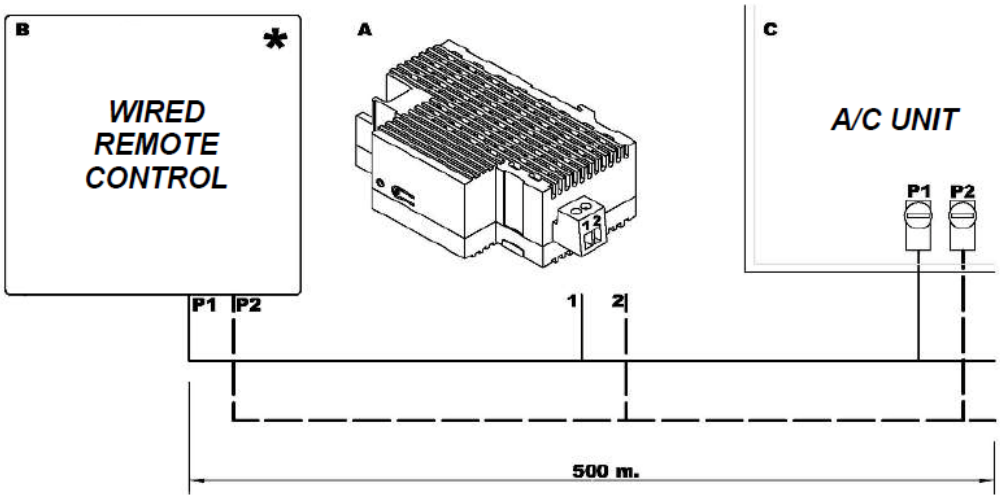


Figure 1.4. Connecting KLIC-DI to bus P1/P2 with wired remote control

Diagrams legend	
A	KLIC-DI
B	Wired remote control
C	A/C unit
P1-P2	Connection base to A/C unit
1-2	Zennio connection terminal block
*	The wired remote control must operate in the opposite mode to KLIC-DI

To obtain more detailed information about the technical features of KLIC-DI, as well as security and installation information, please read the interface **Datasheet**, included in the original package of the device and also available at http://www.zennio.com.

It is also recommended to consult the KLIC-DI **Installation Note**, also available in the same web site.

2. CONFIGURATION

2.1. BASIC CONTROL

With KLIC-DI, the air-conditioning unit can be monitored and controlled the same way it is done with the infrared remote control provided with it.

By means of the KNX bus, the following basic functionalities of the air conditioning unit can be controlled:

- **ON/OFF** of the air-conditioning unit
- **Setpoint Temperature.** Between 16 and 32ºC.
- **Operating mode:** Heat, Cool, Fan and Dry.
- **Fan speed:** 2 or 3 speed levels configuration. (Check out the available levels in the A/C unit).
- **Swing** (if available): swing or fixed position (5 different positions).

These functionalities have associated a machine status, which is periodically sent to KLIC-DI When KLIC-DI receives a status different from the previous one from the machine, it updates the status of the corresponding parameter in the KNX bus.

2.2. ADVANCED FUNCTIONALITIES

Besides the basic control over the air-conditioning system, KLIC-DI offers other advanced functionalities that give an added value with regard to the remote control.

- **Scenes configuration**: allows establishing a specific parameters combination in order to generate a determined climate ambient in the room. KLIC-DI allows configuring up to 4 different scenes.

- **Auto OFF:** allows an automatic and temporary switch off of the machine (after an established delay, if parameterized) if a status change in the communication object associated to it takes place. An example of this functionality could be the use of a window sensor, associated to the auto switch off, which allows switching off the machine if the window is opened.

- **Temperature limitation:** air conditioning systems are limited in temperature to the range 16-32ºC. This KLIC functionality allows configuring custom temperature ranges for the modes Heat and Cool by means of ETS, provided that these values keep the range. In case of receiving from the KNX bus a temperature command with a value out of the configured limits, the temperature value sent to the machine will be the corresponding limit value.

- **Indoor temperature and Reference temperature:** the Variable Refrigerant Volume units have several temperature sensors for measuring the temperature in different internal points.

The **Indoor temperature** is the measured internal value and it is used together with the **Reference temperature** for controlling the modes Auto-Cool and Auto-Heat of the A/C machine.

The **Reference temperature** is the real temperature i the room to acclimatize. It is necessary to communicate this parameter to the machine by means of the corresponding communication object and it is highly recommended to link this communication object with a temperature sensor (installed in the room), which periodically updates the temperature value.

The modes Auto-Heat and Auto-Cool can be controlled in three different ways by the A/C units:

1. The machine receives the Reference Temperature and, according to a pre-configured hysteresis, it establishes the corresponding auto mode.

2. The machine uses he Indoor Temperature and, according to a pre-configured hysteresis, it establishes the corresponding auto mode.

3. The machine establishes the auto mode according to the average value of the Reference Temperature and the Indoor Temperature.

The temperature value used by the machine for switching between the modes Auto-Cool and Auto-Heat depends on the configuration established in the A/C unit installation. This value, in any of the previous cases, is compared to the setpoint temperature in such way that if the setpoint temperature is higher, the Auto-Heat mode is established and if the setpoint temperature is lower than this value, the Auto-Cool is established.

Take into account: *It is highly recommended to link the Reference Temperature to a temperature sensor that periodically monitors the real temperature in the room, because it is possible not to know the switching way pre-configured in the machine and this fact can lead to a wrong functioning of the Auto mode. The Reference Temperature has a default value of 25ºC.*

Errors management: this functionality allows sending messages to the KNX bus informing about errors. Errors management handles the A/C unit error codes as well as any communication errors that may arise.

Besides informing about the apparition of possible errors it can be also configured the sending of the error type. In case of internal errors, the numerical code associated to the error type is shown in Table 2.1.

Error Number	Type of Internal Error
1	Problems with the data reception (speed, parity, etc.)
2	Communication waiting time exceeded (Time Out)
3	Incorrect checksum
4	Incorrect response from the machine

Table 2.1. Type of Internal Error

Regarding the numerical code associated to the type of external errors, please look up the manual of the installed air-conditioning system or the Annex II. Correspondence Error Codes of the A/C Units.

- **Initial configuration:** this functionality allows establishing an initial value for the A/C unit statuses after installing the system or after recovering from a power failure. The statuses that may be configured are: ON/OFF, temperature, mode, fan and swing of the machine.

  The initial values can be sent to the KNX bus.

- **Type of control:** It is important to take into account the type of control (Master or Slave), with which the KLIC-DI is going to be configured.

  The Master remote control in the installation is in charge of the communication with the machine and it will retransmit the instructions and status between the machine and the slave remote control, in case of having one. However, all the functionalities of the machine can be set from both remote controls.

  This functionality allows including in the installation both the KLIC-DI and the A/C unit wired remote control and choosing the desired master/slave configuration whenever the KLIC-DI and the wired control are not configured with the same type of control.

  In case of having both controls configured as Masters, the screen of the A/C unit control will show the error "88" and the error "U5" will be sent to the bus.

Note: *When switching the type of control of the A/C unit wired control between Master and Slave it is necessary to remove the power supply from the wired control and connecting it again for rebooting the wired control in the suitable mode.*

Important: *The wired control **BRC1E51A7** can only operate as Master control. In case of using this model in the installation, it is necessary to configure KLIC-DI as Slave control.*

2.3. CONTROL USING IR REMOTE

KLIC-DI incorporates in its design an infrared receiver, located next to the LED indicator. This functionality eases the installation process of the device, since it is possible to check, from the Zennio IR remote control (see Figure 2.1), that the control over the A/C machines is carried out properly.

Note: *In order to send the corresponding orders from the IR remote control to the interface,* ***it is compulsory to have the indicator LED lit*** *(lighting red).*

The actions that each button of the remote control carries out are shown in the Figure 2.1.

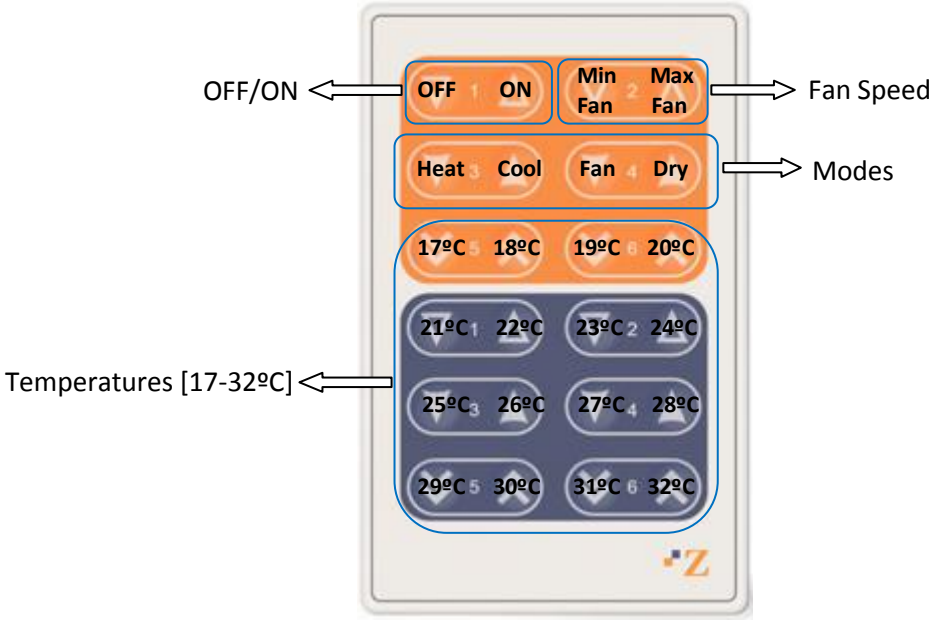


Figure 2.1. pressing zones in the IR remote

3. ETS PARAMETERIZATION

For starting to parameterize the KLIC-DI interface it is necessary, once the ETS program has been opened, importing the data base of the product (version 1.3 of the **KLIC-DI VRV** application program).

Next, the device is added to the project where desired. Click the right mouse button on the device and select "Edit parameters" for starting with the configuration.

In the following sections there is a detailed explanation about each of the different functionalities of KLIC-DI VRV in ETS.

3.1. DEFAULT CONFIGURATION

This section shows the default configuration from which the device parameterization starts.

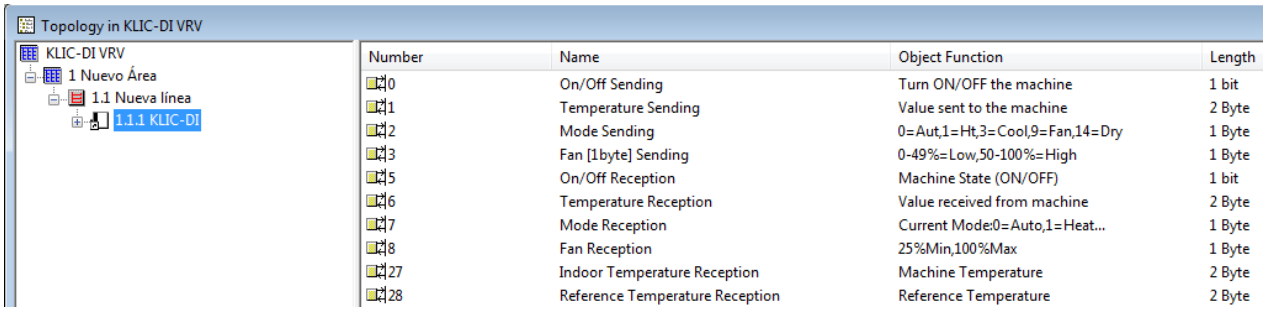

Topology in KLIC-DI VRV
KLIC-DI VRV
1 Nuevo Área
1.1 Nueva línea
1.1.1 KLIC-DI
Number
Name
Object Function
Length
0 On/Off Sending Turn ON/OFF the machine 1 bit
1 Temperature Sending Value sent to the machine 2 Byte
2 Mode Sending 0=Aut,1=Ht,3=Cool,9=Fan,14=Dry 1 Byte
3 Fan [1byte] Sending 0-49%=Low,50-100%=High 1 Byte
5 On/Off Reception Machine State (ON/OFF) 1 bit
6 Temperature Reception Value received from machine 2 Byte
7 Mode Reception Current Mode:0=Auto,1=Heat... 1 Byte
8 Fan Reception 25%Min,100%Max 1 Byte
27 Indoor Temperature Reception Machine Temperature 2 Byte
28 Reference Temperature Reception Reference Temperature 2 Byte

Figure 3.1. Default topology

In the default topology window (see Figure 3.1) appear the communication objects associated to the sending and reception of the orders for basic control of the A/C unit: ON/OFF, Temperature, Mode and Fan.

When entering the Parameters edition for the first time, the default General configuration window of KLIC-DI is shown.

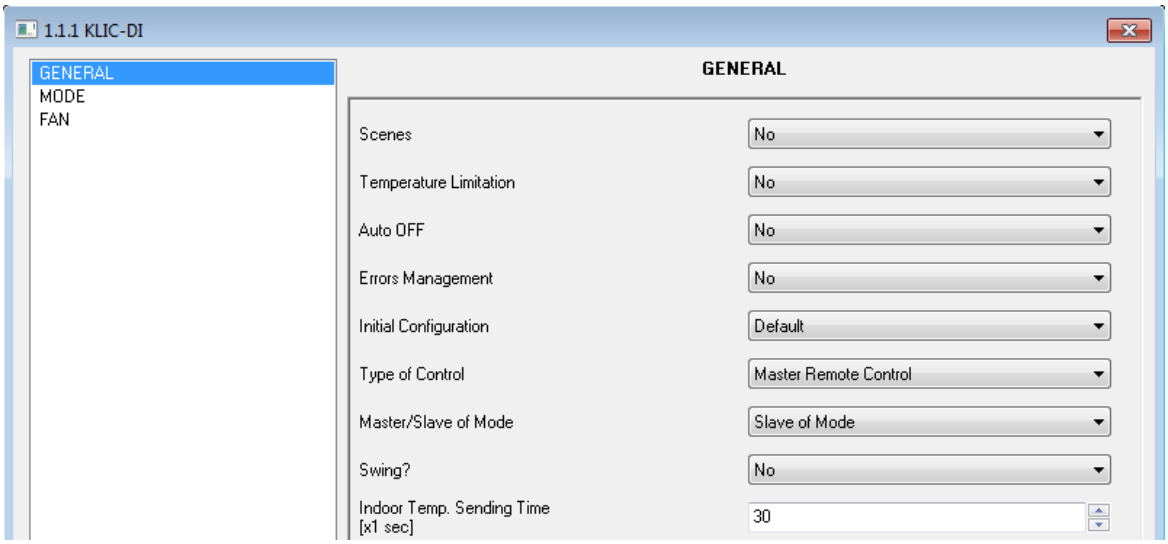


Figure 3.2. Configuration screen by default

As it can be seen in the figure 3.2, the configuration screen has 3 main windows:

- **General:** to individually enable each of the advanced functionalities of the A/C machine.
- **Mode:** to configure features related to the operating mode of the A/C machine.
- **Fan:** to configure features related to the fan speed of the A/C machine.

3.2. GENERAL WINDOW

From the General parameterization window one can enable the advanced functionalities (Scenes, Temperature limitation, Auto OFF, Errors management and Initial configuration), which are disabled by default. All these advanced functionalities are explained in detail in the following sections.

When enabling the desired functionality in the right drop-down box, it will appear in the left menu the access to the corresponding configuration window and the related communication objects will be also enabled.

In the General window one can also configure the desired **type of control** for KLIC-DI: Master or Slave remote control, the enabling or not of the **slats** (**swing**) and the **Indoor Temperature sending time**.

3.2.1. SCENES

After enabling this functionality, it will appear in the left menu the option Scenes, where to enable and parametrize each of the 4 available scenes. The scene to be run will be sent to the KNX bus through the object, enabled for this aim: "Scenes".

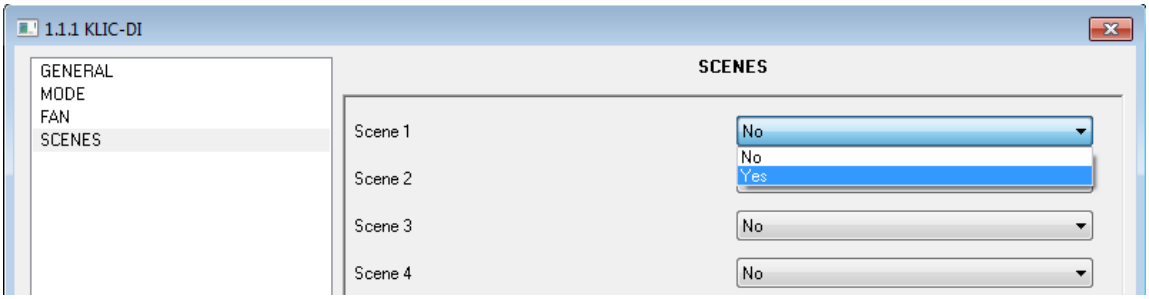


Figure 3.3. Scenes configuration window

For every enabled scene, the parameters that may be configured are the following:

- **Scene number.** It indicates the scene number (from 1 to 64) to which the corresponding configured orders will be sent to the A/C machine.
- **ON/OFF.** Possibility to choose the A/C machine status: No change, OFF or ON.
- **Temperature.** No change or sending of a new temperature value (from 16ºC to 32ºC).
- **Mode.** No change, Heat, Dry, Fan or Cool.
- **Fan.** No change, minimum or maximum.
- **Swing.** No change, Swing or Fix Position (5 available).

In the figure 3.4, an example of scene configuration is shown.

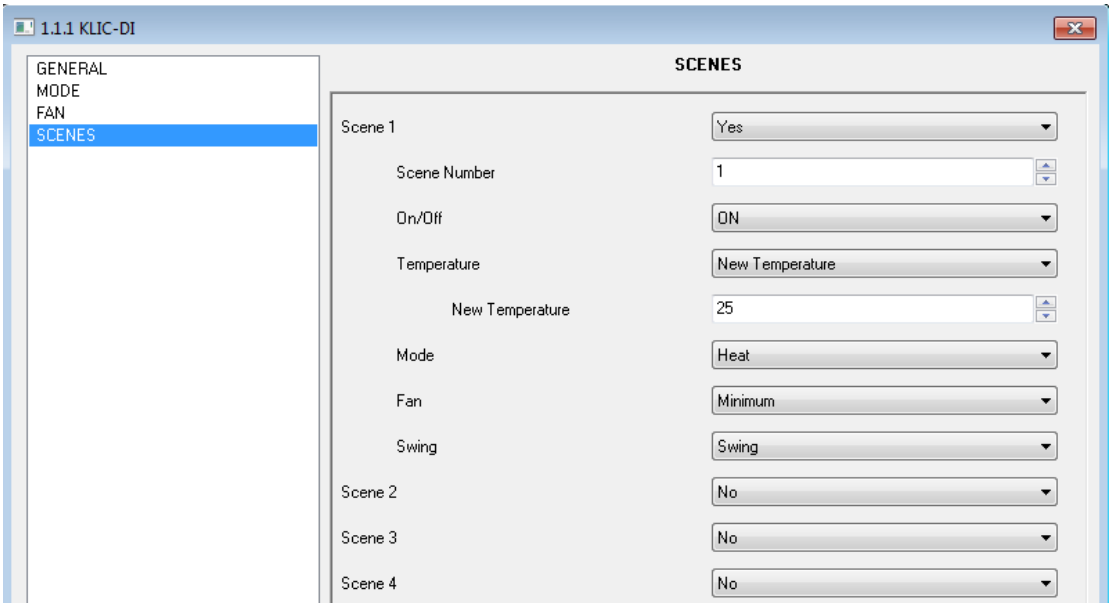


Figure 3.4. Scene configuration example (Scene 1)

3.2.2. TEMPERATURE LIMITATION

Variable Refrigerant Volume units have defined upper and lower temperature limits that cannot be exceeded (16ºC-32ºC). Nevertheless, KLIC-DI offers the possibility of establishing new temperature limits if they are specified within the A/C unit predefined limits (please, look up the A/C unit manual).

The temperature limits can be customized for the two modes that have a temperature associated: Cool and Heat.

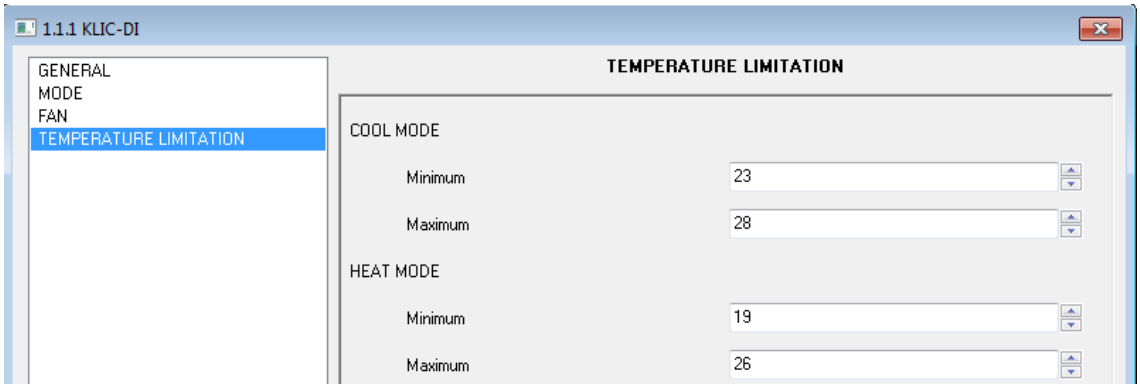


Figure 3.5. Temperature limitation configuration

For these limits to be taken into account, it will be necessary to explicitaly enable the temperature limitation, by sending the value "1" through the specific communication object "Temperature Limitation". To control the machine using its predefined temperature limitations, it is necessary to send the value "0" through the same object.

Once established the new temperature limits for every mode and enabled the functionality, when a value out of the range is sent from the KNX bus, the value that will be sent to the AC unit will be the corresponding temperature limit and this new temperature will be notified, through the object "Temperature sending".

Note: *When configuring in ETS the temperature limitation, this functionlaity is automatically enabled by default and the personalized ranges will control the unit performance when it switches on.*

3.2.3. AUTO OFF

This option allows switching off the AC machine temporarily if a status change (from value "0" to value "1") in the associated communication object happens ("Auto-OFF").

Figure 3.6. Auto OFF configuration

The only parameter to configure is:

- **Delay for Auto-OFF:** to establish the time, in seconds, KLIC-DI waits before automatically switching off the A/C machine.

Once the A/C machine has been automatically switched off, any ON order will be ignored until the object “Auto-OFF” has the value “0”.

3.2.4. ERRORS MANAGEMENT

The errors management window allows enabling the sending of messages to the KNX bus indicating any error that may arise: internal errors of the communication between KLIC-DI and the A/C unit, or external errors (errors in the own A/C unit).

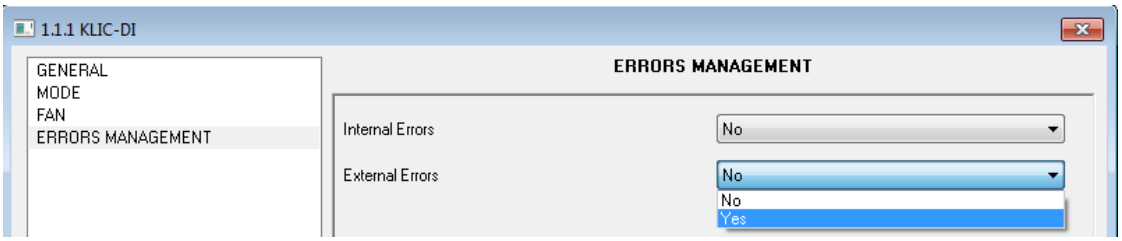


Figure 3.7. Errors management configuration window

The detection of internal, external or both types of errors can be enabled:

- **Internal errors:** when enabling this option, two new communication objects appear: "Internal error", 1-bit object and "Type of internal error", 1-byte object. The first one indicates if an internal error has occurred (value "1": there is an error, value "0": there is not). The second object indicates the code that identifies the error (numerical value between 1 and 4. See Table 2.1: Type of Internal Errors).

- **External errors:** when enabling this option, two new communication objects appear: "External Error" and "Type of external error". The first one indicates if an external error has occurred (value "1": there is an error, value "0": there is not). The second object indicates the code that identifies the error (see the specific manual of the A/C unit installed or see Annex II. Correspondence Error Codes of the A/C Units).

3.2.5. START-UP CONFIGURATION

This functionality allows configuring the initial statuses of the A/C machine after the installation or a power failure. This configuration can be default or custom. If a custom configuration is chosen, the window of the figure 3.8 will be shown.

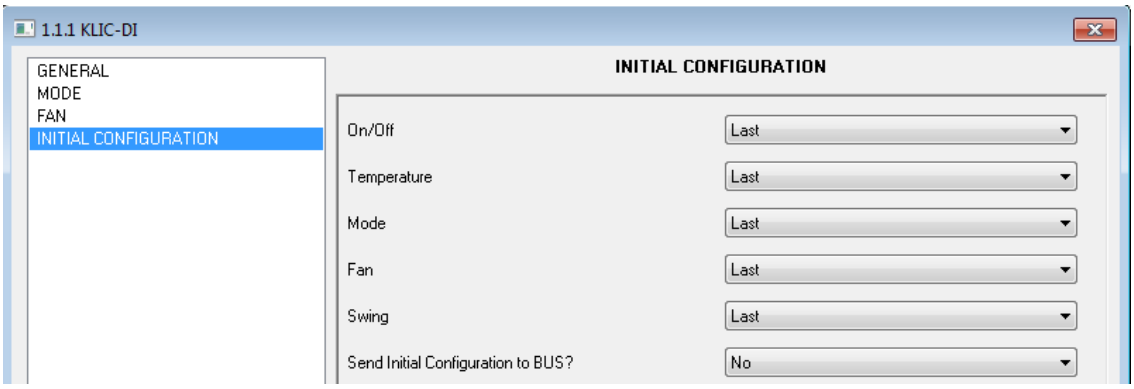


Figure 3.8. Initial configuration window

The variables than can be initialized are the following:

- **ON/OFF:** last (the status the machine had before the power failure; after the first installation, this status will be OFF), ON or OFF.
- **Temperature:** Last or custom (a new field appears to establish the new initial temperature).
- **Mode:** Last, Heat, Dry, Fan or Cool.
- **Fan:** Last, minimum or maximum.
- **Swing:** Last, Swing or Fix Position (5 available).

Moreover, it can be configured the sending of the statuses to the KNX bus and when they must be carried out:

- **Send initial configuration to BUS?:** If this sending is enabled ("Yes"), a new field will appear next: "**Delay**", where to configure the time, in seconds, KLIC-DI delays the sending of the statuses to the KNX bus.

3.2.6. TYPE OF CONTROL

From the General window one can also select the type if control to be applied to KLIC-DI: **Master or Slave Remote control.**

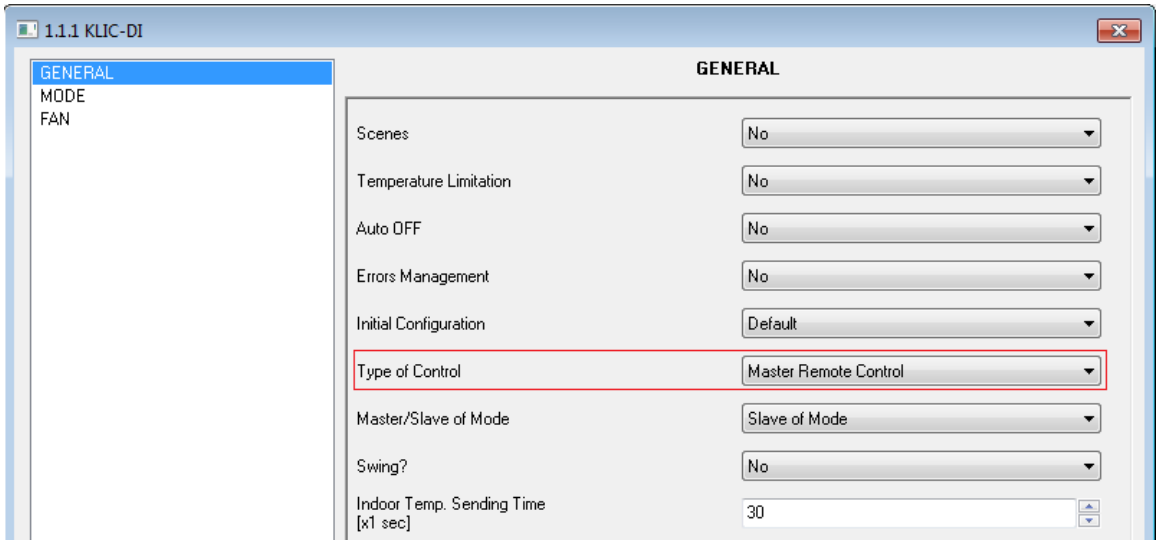


Figure 3.9. Type of control: master or slave

When the option **Master remote control** is selected, the drop-down box "Master/Slave of Mode" is enabled, because only when KLIC-DI is configured as Master, it can be Master of Mode.

The parameter **Master/Slave of Mode** allows configuring the KLIC-DI as Master or Slave of mode. When the device is configured as **Master of mode,** all the modes of the system can be configured from the KLIC-DI. However, when the device is configured as **Slave of mode,** it could only set the mode configured in the device acting as master control (Cool or Heat) and the Fan mode.

In the Table 3.1, the modes that can be configured in the device acting as Slave of mode depending on the configured mode in the Master of mode are shown.

Mode configured in the Master of Mode	Configurable modes from the Sleve of mode
Heat	Heat and Fan
Cool	Cool, Fan and Dry
Fan	Fan

Table 3.1. Modes for Master and Slave of mode

Note: *When KLIC-DI is configured as Master of mode, it is not possible to set from the wired remote control of the A/C unit another Master of mode.*

3.2.7. SWING

Thanks to this parameter, one can select whether to carry put a control over the slats of the A/C machine or not.

Note: *Make sure that the model of the A/C unit has slats (swing option) in the user manual, before configuring it. If it does not have this option, this configuration could result in an incorrect control of the system performance.*

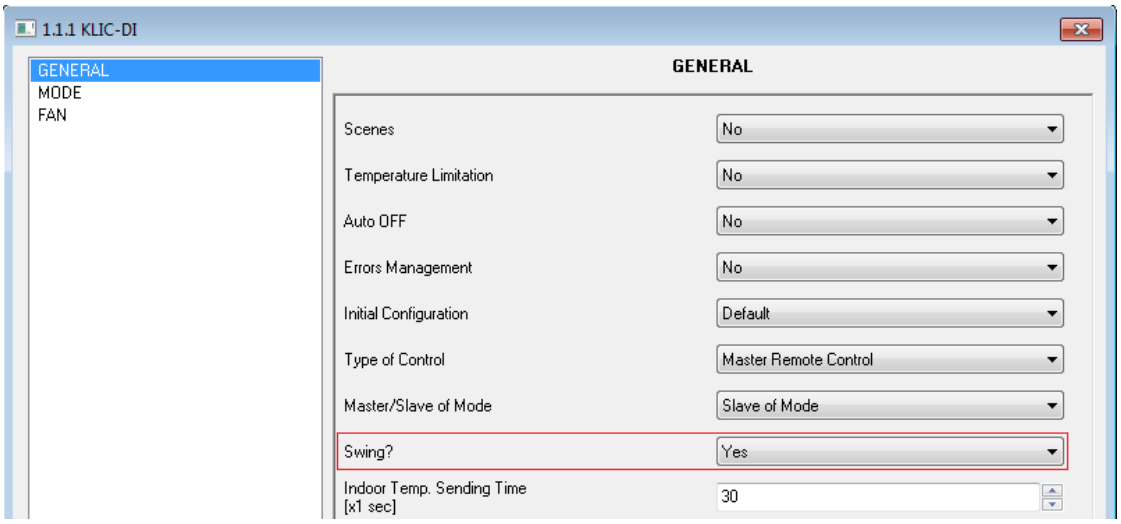


Figure 3.10. Swing

The slats have **5 fixed positions** and the options of constant movement and stopped.

When enabling this option ("Yes"), two communication objects appear (1-byte each): "Swing [1 byte] Sending" and "Swing [1 byte] Reception" and two other objects of 1-bit each: "Swing sending" and "Swing [1 bit] reception". All of them allow controlling and showing at any moment the slats working status, specifically:

- The 1-bit object "Swing sending" allows selecting the swing performance in the following way:

  - **Sending the value "0":** If the slats are in a fixed position, the position number is risen. In case of being in swing mode, the slats change to the last fixed position they had before entering in swing mode.

  - **Sending the value "1":** The slats begin to work in swing mode.

  The status object ("Swing [1 bit] reception") will indicate the slats working: swing (value "1") or fixed position (value "0").

- The 1-byte object "Swing [1 byte] sending" allows establishing the slats position be means of sending a value in percentage, according to the rates shown in Table 3.2.

  The status object ("Swing [1 byte] reception") will indicate the slats current status, in percentage.

Value of the object "Swing [1 byte] Sending"	Number of Fixed position	Value of the object "Swing [1 byte] Reception"
0%	Position 1	0%
1-20%	Position 2	20%
21-40%	Position 3	40%
41-60%	Position 4	60%
61-80%	Position 5	80%
81-100%	Swing	100%

Table 3.2. Value of the objects "Swing [1 byte]"

Note: *Take into account that due to the internal performance of the A/C unit, if the fixed position number 3 or higher is configured being in mode Cool, the A/C unit will not answer to this command in order to avoid a cold air flow directed to a particular point of the room (where a person could be located). In the same way, if the position 2 or lowewr is configured being in the mode Heat, the A/C unit will not answer to this command in order to avoid amn accumulation of hot air in the upper part of the room.*

3.3. MODE WINDOW

As seen in section 3.1. Default Configuration, the specific Mode window allows configuring featured regarding to the operating mode of the A/C machine.

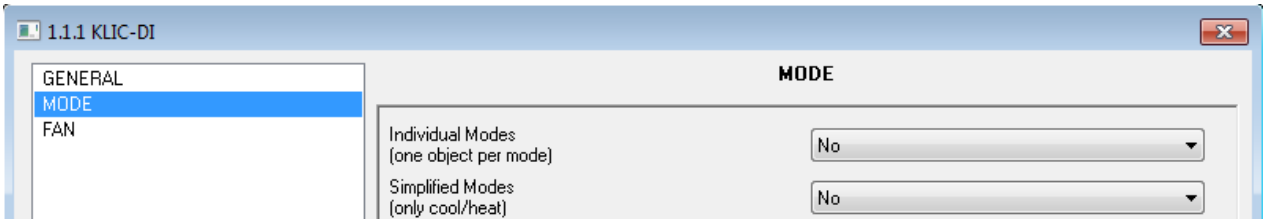


Figure 3.11. Mode window

- **Individual modes:** when selecting this option, 8 new 1-bit communication objects will be shown. 4 of them are associated to the sending of each of the available modes (Cool, Fan, Heat and Dry) and the other 4 objects, to the reception from the A/C machine of the status of every mode.

  The objects associated with the sending are: "Cool Mode Sending", "Fan Mode Sending", "Heat Mode Sending" and "Dry Mode Sending".

The objects associated to the reception are: "Cool Mode Reception", "Fan Mode Reception", "Heat Mode Reception" and "Dry Mode Reception".

Moreover, the objects "Mode Sending" and "Mode Reception" (1-byte each and available by default) may be used.

If the option Individual modes is activated, the operating mode of the A/C machine can be modified (by writing the value "1" through the sending object associated to the desired individual mode). Moreover, the current mode will be also sent to the KNX bus, through the object "Mode Reception" and with the 1-bit reception object of the individual current mode.

- **Simplified modes:** when selecting this option, the 1-bit object "Simplified Mode" will be enabled. It allows establishing the desired mode: Cool mode, writing the value "0" in the object, or Heat mode, writing the value "1". For this control object there is no status object associated.

3.4. FAN WINDOW

In this window it can be configured several features related to the fan speed of the A/C machine.

Figure 3.12. Fan window

- **Number of levels:** this option allows configuring the number of fan levels the A/C unit has. These may be **2 or 3 levels**. The fan speed has associated two 1-byte objects: "Fan [1 Byte] Sending" and "Fan Reception", for controlling and indicating the fan speed, respectively. The control object ("Fan Sending") records the fan speed in percentage. This value will be interpolated in such a way that corresponds to the selected number of levels, as it can be seen next. The status object ("Fan Reception") will show the current fan sped, according to the interpolated percentages.

- **2 levels:** The fan speed percentages will be interpolated as shown in Table 3.3.

Initial Speed Percentage	Interpolated Speed Percentage	Level
0-49%	25%	Minimum
50-100%	100%	Maximum

Table 3.3. Fan speed percentages for 2 levels

- **3 levels:** The fan speed percentages will be interpolated as shown in Table 3.4.

Initial Speed Percentage	Interpolated Speed Percentage	Level
0-32%	25%	Minimum
33-65%	50%	Medium
66-100%	100%	Maximum

Table 3.4. Fan speed percentages for 3 levels

Step control: the selection of this option ("Yes") enables the 1-bit object "Fan [1 bit] Sending" that allows increasing (sending the value "1") or decreasing (value "0") the fan speed in one level (for example, for 3 levels, in the minimum level of fan speed, the value "1" is sent via the object "Fan [1 bit] Sending", the fan speed level will go to medium).

The step control is **not cyclical.** This means that, being in the Auto level (0%), when decreasing the fan speed level, the AC machine will stay in the auto mode until the speed level is increased. The same way, when the speed level is in the maximum level (100%), the machine will remain in this level until receiving an order to decrease the speed.

ANNEX I. COMMUNICATION OBJECTS

SECTION	NUMBER	SIZE	IN/OUT	FLAGS	VALUES			NAME	DESCRIPTION
					RANGE	1st TIME	RESET		
GENERAL	0	1 bit	I	W	0/1	0	Last	ON/OFF Sending	Turn ON/OFF the machine
	1	2 bytes	I	W	16-32ºC	25ºC	Last	Temperature Sending	Value sent to the machine
	2	1 byte	I	W	0-255	Cool (3)	Last	Mode Sending	0=Aut;1=Heat;3=Cool;9=Fan;14=Dry
	3	1 byte	I	W	0-100%	0	Last	Fan [1 byte] Sending	0-49%=Low, 50-100%=High → For 2 levels 0-32%Min,33-65%Med,>65%Max → For 3 levels
	4	1 bit	I	W	0/1	0	Last	Swing sending	0=Among fixed pos.,1=Motion
	5	1 bit	O	RT	0/1	Status dependant	Last	ON/OFF Reception	Machine state (ON/OFF)
	6	2 bytes	O	RT	16-32ºC	Status dependant	Last	Temperature Reception	Value received from the machine
	7	1 byte	O	RT	0-255	Status dependant	Last	Mode reception	Actual mode: 0=Aut;1=Heat;3=Cool;9=Fan;14=Dry
	8	1 byte	O	RT	0-100%	Status dependant	Last	Fan Reception	25%Min,100%Máx → For 2 levels 25%Min,50%Med,100%Max → For 3 levels
	9	1 byte	O	RT	0-100%	Status dependant	Last	Swing [1 byte] Sending	0-80%=Fixed Pos.,100%=Motion
MODE	10	1 bit	I	WT	0/1	0	Last	Cool mode sending	1=Set Cool Mode; 0=Nothing
	11	1 bit	I	WT	0/1	0	Last	Heat mode sending	1=Set Heat Mode; 0=Nothing
	12	1 bit	I	WT	0/1	0	Last	Fan mode sending	1=Set Fan Mode; 0=Nothing
	13	1 bit	I	WT	0/1	0	Last	Dry mode sending	1=Set Dry Mode; 0=Nothing
	14	1 bit	I	W	0/1	0	Last	Simplified Mode	0=Cool; 1=Heat

SECTION	NUMBER	SIZE	IN/OUT	FLAGS	VALUES			NAME	DESCRIPTION
					RANGE	1st TIME	RESET		
MODE	15	1 bit	O	RT	0/1	0	Last	Cool mode reception	1=Cool mode enabled; 0=Disabled
	16	1 bit	O	RT	0/1	0	Last	Heat mode reception	1=Heat mode enabled; 0=Disabled
	17	1 bit	O	RT	0/1	0	Last	Fan mode reception	1=Fan mode enabled; 0=Disabled
	18	1 bit	O	RT	0/1	0	Last	Dry mode reception	1=Dry mode enabled; 0=Disabled
FAN	19	1 bit	I	W	0/1	0	Indifferent	Fan [1 bit] Sending	0=Down; 1=Up
SCENES	20	1 byte	I	W	0-63	Indifferent	Indifferent	Scenes	Set Scene "value"
TEMPERATURE LIMITATION	21	1 bit	I	W	0/1	0	Last	Temperature limitation	0=Disable; 1=Enable
AUTO OFF	22	1 bit	I	W	0/1	0	Last	Auto-OFF	0=Disable; 1=Enable
ERRORS MANAGEMENT	23	1 bit	O	RT	0/1	Connection status dependant	Connection status dependant	Internal error	0=No Error; 1=Error
	24	1 byte	O	RT	1-4	Error type dependant	Error type dependant	Type of Internal Error	1=Recep.Err, 2=TimeOut, 3=Checksum, 4=Resp.Err
	25	1 bit	O	RT	0/1	Machine status dependant	Machine status dependant	External error	0=No Error; 1=Error
	26	1 byte	O	RT	0-255	Error type dependant	Error type dependant	Type of External Error	Check errors table
TEMPERATURES RECEPTION	27	2 bytes	O	RT	0-120.0ºC	Machine type dependant	Last	Indoor temperature reception	Machine temperature
	28	2 bytes	I	WU	0-120.0ºC	25ºC	Last	Reference temperature reception	Reference temperature:
SWING	29	1 byte	I	WU	0-100%	0	Last	Swing [1 byte] Sending	0-80%=Fixed Pos.;100%=Mot.
	30	1 bit	O	RT	0/1	0	Last	Swing [1 bit] Reception	0=Fixed Position; 1=Motion

ANNEX II. CORRESPONDENCE ERROR CODES OF THE A/C UNITS

Next table shows the correspondence between the external error code provided by KLIC-DI at the bus KNX and the breakdown codes of the A/C units:

ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE
1	1	27	AH	53	E5	79	HF	105	J9	131	P3	157	UJ	183	87	209	61	235	5H
2	2	28	AC	54	E6	80	F0	106	JA	132	P4	158	UE	184	88	210	62	236	5C
3	3	29	AJ	55	E7	81	F1	107	JH	133	P5	159	UF	185	89	211	63	237	5J
4	4	30	AE	56	E8	82	F2	108	JC	134	P6	160	90	186	8A	212	64	238	5E
5	5	31	AF	57	E9	83	F3	109	JJ	135	P7	161	91	187	8H	213	65	239	5F
6	6	32	C0	58	EA	84	F4	110	JE	136	P8	162	92	188	8C	214	66	240	40
7	7	33	C1	59	EH	85	F5	111	JF	137	P9	163	93	189	8J	215	67	241	41
8	8	34	C2	60	EC	86	F6	112	L0	138	PA	164	94	190	8E	216	68	242	42
9	9	35	C3	61	EJ	87	F7	113	L1	139	PH	165	95	191	8F	217	69	243	43
10	0A	36	C4	62	EE	88	F8	114	L2	140	PC	166	96	192	70	218	6A	244	44
11	0H	37	C5	63	EF	89	F9	115	L3	141	PJ	167	97	193	71	219	6H	245	45

ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE	ERROR BUS	CODE
13	0J	39	C7	65	H1	91	FH	117	L5	143	PF	169	99	195	73	221	6J	247	47
14	0E	40	C8	66	H2	92	FC	118	L6	144	U0	170	9A	196	74	222	6E	248	48
15	0F	41	C9	67	H3	93	FJ	119	L7	145	U1	171	9H	197	75	223	6F	249	49
16	A0	42	CA	68	H4	94	FE	120	L8	146	U2	172	9C	198	76	224	50	250	4A
17	A1	43	CH	69	H5	95	FF	121	L9	147	U3	173	9J	199	77	225	51	251	4H
18	A2	44	CC	70	H6	96	J0	122	LA	148	U4	174	9E	200	78	226	52	252	4C
19	A3	45	CJ	71	H7	97	J1	123	LH	149	U5	175	9F	201	79	227	53	253	4J
20	A4	46	CE	72	H8	98	J2	124	LC	150	U6	176	80	202	7A	228	54	254	4E
21	A5	47	CF	73	H9	99	J3	125	LJ	151	U7	177	81	203	7H	229	55	255	4F
22	A6	48	E0	74	HA	100	J4	126	LE	152	U8	178	82	204	7C	230	56		
23	A7	49	E1	75	HH	101	J5	127	LF	153	U9	179	83	205	7J	231	57		
24	A8	50	E2	76	HC	102	J6	128	P0	154	UA	180	84	206	7E	232	58		
25	A9	51	E3	77	HJ	103	J7	129	P1	155	UH	181	85	207	7F	233	59		
26	AA	52	E4	78	HE	104	J8	130	P2	156	UC	182	86	208	60	234	5A		

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